PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PD53620PC00	**FOR FURTHER ACTION**	See Form PCT/IPEA/416
International application No. PCT/EP2005/001557	International filing date *(day/month/year)* 16.02.2005	Priority date *(day/month/year)* 12.03.2004
International Patent Classification (IPC) or national classification and IPC INV. H01Q1/24 H01Q9/04		
Applicant SONY ERICSSON MOBILE COMMUNICATIONS AB et al.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☒ *sent to the applicant and to the International Bureau)* a total of 2 sheets, as follows:
      ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
31.12.2005	28.06.2006
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Cordeiro J-P. Telephone No. +49 89 2399-8252

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2005/001557

Box No. I Basis of the report

1. With regard to the **language**, this report is based on

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
   - ☐ international search (under Rules 12.3(a) and 23.1(b))
   - ☐ publication of the international application (under Rule 12.4(a))
   - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages	
1-9	as originally filed
Claims, Numbers	
1-13	received on 31.12.2005 with letter of 28.12.2005
Drawings, Sheets	
1/2, 2/2	as originally filed

   ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

* *If item 4 applies, some or all of these sheets may be marked "superseded."*

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	11
	No:	Claims	1-5,9,10,12,13
Inventive step (IS)	Yes:	Claims	
	No:	Claims	11
Industrial applicability (IA)	Yes:	Claims	1-13
	No:	Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V.

1. In order to facilitate easy reference the documents cited in the International Search Report are numbered seriatim (i.e. D1 to D4). Reference is herewith made to D1 : EP 1 306 922 A (MATSUSHITA ELECTRIC IND CO LTD) 2 May 2003 (2003-05-02).

2. Present claim 1, insofar as it is understandable, does not satisfy the requirements of Article 33(2) PCT because its subject-matter lacks novelty considering D1: EP-1-306922 (see e.g.: figures 4a-4b & column 18, [0106] - [0108]; figure 11 & column 22, [0134] - [0135]) which discloses all the features from claim 1:
Portable communication device (101) comprising: an antenna feeding circuit (303), at least a first part (figures 1, 3, 11) having a hollow interior and provided with a main section having a certain width, length and a first height and where different electrical elements are provided, and an antenna system comprising: a ground plane (301a, 321, 322) located within and extending along essentially the whole width and the length of at least the main section, and an antenna element (302, 105, 106) located within the first part, wherein said ground plane is provided in one piece, the only electrical elements of the first part being electrically connected to said ground plane are radio transmission elements, the ground plane and the antenna element are provided from the same piece of material on one and the same substrate, and said antenna element is distanced from the ground plane with at least approximately the first height in a height direction of the first part (figures 4a-4b, 11 & column 18, [0106] - [0108] & column 22, [0134] - [0135]).

3. The same objection for lack of novelty applies mutatis mutandis to claim 13 considering that the claimed subject-matter equates the claimed subject-matter from claim 1.

4. Dependent claims 2 to 5, 9, 10 and 12 do not contain any feature which, in combination with the features of any claim to which they refer, meets the requirements of Article 33(2) PCT considering D1.
Considering claim 11, the change of antenna using a monopole antenna is a well known alternative in the art not inventive considering that it does not present any unexpected special technical feature over the alternatives of D1 (see e.g. column 22, [0134]-[0135]) rendering present claim 11 not inventive with respect to D1 and common knowledge (Article 33(3) PCT).

5. It appears that the combination of claims 1 and 6 is not rendered obvious from the present prior art.

CLAIMS

1. Portable communication device (10) comprising:
an antenna feeding circuit (27),
at least a first part (12) having a hollow interior and provided with a main section having a certain width, length and a first height and where different electrical elements are provided, and
an antenna system comprising:
a ground plane (22, 24) located within and extending along essentially the whole width and the length of at least the main section, and
an antenna element (28) located within the first part,
wherein
said ground plane is provided in one piece,
the only electrical elements of the first part being electrically connected to said ground plane are radio transmission elements,
the ground plane and the antenna element are provided from the same piece of material on one and the same substrate (36), and
said antenna element is distanced from the ground plane with at least approximately the first height in a height direction of the first part.

2. Portable communication device according to claim 1, wherein the ground plane is provided on a substrate provided for a user interface (38) arranged in said first part.

3. Portable communication device according to claim 1 or 2, further comprising a second part (14) and wherein the first part has a hinging section (20), for providing rotation of the first part in relation to said second part around an axis (16) of rotation.

4. Portable communication device according to claim 3, wherein the ground plane is connected to the second part, preferably via the hinging section, for providing a common ground potential in both parts.

5. Portable communication device according to claim 4, wherein the antenna feeding circuit is provided in the second part.

6. Portable communication device according to any of claims 3 - 5, wherein the hinging section is hollow and has a second higher height and said antenna element is provided inside the hinging section.

7. Portable communication device according to any of claims 3 - 7, wherein the ground plane stretches into the hinging section.

8. Portable communication device according to claim 7, wherein the ground plane is provided with a bent section (24) provided within the hinging section and bent away from the part of the ground plane provided in the main section for providing an increased distance between the ground plane and the antenna element in a hinge cavity corresponding to the second height.

9. Portable communication device according to any previous claim, wherein the antenna element is a multiband antenna element.

10. Portable communication device according to any previous claim, wherein the antenna element is a PIFA antenna element.

11. Portable communication device according to any previous claim, wherein the antenna element is a monopole antenna element.

12. Portable communication device according to any previous claim, wherein it is a cellular phone.

13. Antenna system for provision in a portable communication device, the device having an antenna feeding circuit (27) and a first part (12) with a hollow interior and provided with a main section having a certain width, length and a first height where different electrical elements are provided, and comprising:
a ground plane (22, 24) located within and extending along essentially the whole width and length of at least the main section, and
an antenna element (28) located within the first part,
wherein
said ground plane is provided in one piece,
the only electrical elements of the first part being electrically connected to said ground plane are radio transmission elements,
the ground plane and the antenna element are provided from the same piece of material on one and the same substrate (36), and
said antenna element is distanced from the ground plane with at least approximately the first height in a height direction of the first part.